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EXAMINER

DANIELS, MATTHEW J

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/730,564
Filing Date: December 08, 2003
Appellant(s): BAREFIELD ET AL.

MAILED
JAN 24 2008
GROUP 1700

John Wiley Horton
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 25 October 2007 appealing from the Office action mailed 28 August 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

2,604,362	SUGERMAN ET AL	7-1952
3,570,074	SCHIMMEYER ET AL	3-1971
5,132,069	NEWTON	7-1992
5,611,636	FLORY	3-1997

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flory (USPN 5611636) in view of Newton (USPN 5132069).

As to Claim 11, Flory teaches a method for attaching an anchor having an internal passage and an open end to a region of strands on an end of a cable, comprising:

- a) exposing said region of strands in said cable (Fig. 2, items 4, 6, 8);
- b) placing said region of strands within said internal passage of said anchor (Fig. 2, item 10);
- e) providing a potting compound which transitions from a liquid state to a solid state over time (5:28);

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f) introducing potting compound in a liquid so that the liquid potting compound infuses throughout the region of strands (Figs. 1-8)

h) allowing said liquid potting compound to harden into a solid, thereby locking said region of strands within said anchor (5:32).

Flory is silent to:

- c) providing an injector, including
 - i) a sealing surface;
 - ii) a needle, extending from said sealing surface, having a first end proximate said sealing surface and a second end distal to said sealing surface;
 - iii) an injection orifice proximate said second end of said needle;
- d) clamping said injector against said open end of said anchor so that said needle protrudes into said region of strands and said sealing surface seals said open end of said anchor;
- e) injecting said potting compound, in said liquid state, under pressure into said strand cavity through said injection orifice;
- g) withdrawing said needle while said potting compound is still in said liquid state;

However, Newton teaches

- c) providing an injector (18, 28), including
 - i) a sealing surface (16);

ii) a needle (18, 28), extending from said sealing surface (Fig. 2), having a first end proximate said sealing surface and a second end distal to said sealing surface (Fig. 2, item 18);

iii) an injection orifice proximate said second end of said needle (18);

d) clamping said injector against said open end of the cavity (it is submitted that Newton's mold would obviously be clamped closed) so that said needle protrudes into said region of strands and said sealing surface seals said open end of the cavity (Fig. 2, especially items 18 and 16);

e) injecting said potting compound, in said liquid state, under pressure into said strand cavity through said injection orifice (2:4);

g) withdrawing said needle while said potting compound is still in said liquid state (2:4-6, 5:19-26);

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Newton into that of Flory for the following reasons:

a) Newton suggests the method for use with a curable resin, fibers, and a "gallery" or resin distribution core (20), which Flory provides (Fig. 1 shows the resin distribution core of Flory).

b) The method of Flory provides the basic claimed process for applying potting compounds for anchoring the ends of cables. The claimed invention purports to be an improvement because of a sealing surface, injection under pressure, and the use of a removable needle. However, the method of Newton demonstrates that it is generally known to provide a needle, inserted into a fibrous material and core (Fig. 2, items 24, 20), sealing of mold surfaces (Fig. 2, item 16), and injection of a curable resin under pressure. Thus, the method of Newton was improved in the

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same manner. One of ordinary skill could have applied the method of Newton to that of Flory using the knowledge already available from the Flory by providing Newton's mold portion, which seals to the base mold and uses an injection needle inserted into the core, with the core of Flory (Fig. 1) to achieve the expected results that the resin would be more thoroughly and evenly distributed among the fiber materials with fewer voids, bubbles or capillary effects.

As to Claim 12, Newton teaches that when providing a sealed mold (Fig. 2), it is necessary to provide a vent (4:62-64) so that air displaced by the injected resin can leave the mold cavity, which would desirably reduce bubbles and voids.

Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schimmeyer (USPN 3570074) in view of Sugerman (USPN 2604362).

As to Claim 20, Schimmeyer teaches a method for attaching an anchor having an internal passage and an open end to a region of strands on an end of a cable (Figures), comprising:

- a) exposing said region of strands in said cable (Fig. 3, item 12a);
- b) placing said region of strands within said internal passage of said anchor (Fig. 2);
- c) providing a pin including
 - i) a sealing surface (area between 30 and 31 in Fig. 2)
- d) clamping the pin against the open end of the anchor (3:8-11)
- e) providing a potting compound which transitions from liquid state to solid state (2:12-14);
- f) applying the potting compound in a liquid state to the stands so that the liquid potting compound infuses throughout the region of the strands; and

g) allowing the liquid potting compound to harden into the solid state, locking the region of strands within the anchor (3:12-14, Fig. 2).

Schimmeyer is silent to:

- (c)(ii) the injection orifice in the sealing surface;
- (d) the injection orifices directed toward the regions of the strands;
- (e) injecting the potting compound in a liquid state.

However, these aspects of the invention would have been obvious over Sugerman for the following reasons:

(c)(ii) Sugerman teaches an injection orifice and vent in a sealing surface of a round plate (Fig. 1, items 12, 19, and 20).

(d) Sugerman teaches an orifice directed towards strands (Fig. 1 and Fig. 3)

(e) Sugerman teaches injecting the potting compound (3:44) after placement of the filaments into the mold (col. 3) such that the liquid potting compound infuses throughout the region of strands. Injecting implicitly requires pressure.

The method of Sugerman is reasonably pertinent to the particular problem with which the Applicant was concerned, namely impregnation of fibers or fibrous materials with a potting compound.

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Sugerman into that of Schimmeyer for the following reasons:

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a) Schimmeyer provides the basic claimed process (as set forth above), upon which the claimed invention purports to be an improvement by the particular order of steps claimed (impregnation after placement in anchor) and the use of an injector. However, Sugerman teaches that it is already known to provide an injection port into a mold for the encapsulation of the ends of fibrous materials by providing an injection port directed towards the strands, providing the claimed order of steps and the injecting step (which implicitly requires pressure). Therefore, Sugerman teaches that the improvement was also known. One of ordinary skill could have rearranged the order of the assembling and injecting steps applied the Sugerman technique to the Schimmeyer process by providing an injection port on the sealing portion to provide the predictable result of embedding of fibers within the thermosetting material.

b) Schimmeyer provides the basic claimed process. Sugerman provides an injecting process that is applicable to the fixing and embedding of fibers in a curable material. One of ordinary skill would have recognized that applying the Sugerman injection method to the Schimmeyer process would have led to improved impregnation of the fibers with the curable resin by injecting the resin, which implicitly requires pressure.

As to Claim 21, Sugerman teaches a vent, which predictably allows air to be displaced from the mold when filling the mold (3:35-45).

(10) Response to Argument

Argument A

Appellants argue that a prima facie case of obviousness has not been established with respect to Claims 11 and 12 because the references do not clamping the anchor and injector

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together such that a seal is formed. Appellants further argue that the claimed invention uses the anchor itself as part of a sealed mold, and that this innovation is much more than an ordinary modification of prior art processes. Appellants further rely on *In re Dembiczak*, 175 F.3d 994 (Fed.Cir. 2000), and on *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 297 (Fed.Cir. 19885), to support the position that there must be a suggestion, teaching, or motivation to combine the prior art references. Appellants further argue that the P.T.O. has not shown that one skilled in the art would be motivated to use the anchor itself as a part of a sealed mold absent Petitioner's disclosure. Appellants further argue that the modification set forth in the rejection which would destroy the combination, and that Flory utilizes an attachment lug which allows for attachment of the lug. Appellants argue that the lug would prevent the forming of a seal, and because these features would need to be removed, the modification would destroy the invention.

Response A

The Examiner notes that the claimed invention is not distinguished in any way by its use of the anchor as the mold. Fig. 11 of the instant application depicts the anchor as item 18, and this is substantially identical to the anchor of Flory (Fig. 2, item 10), which is also used as a mold when resin is introduced into the anchor (Flory, 4:55-62). The resinous material is poured into the insert central passage (4:55-56), but Flory also teaches that the resinous material is intended to refer to any material which can be cast, poured, or injected in a liquid state (4:63-67) and then set to a solid state.

The secondary reference to Newton discloses a method of injecting a flowable resin into fibers (Newton, 3:47-58) and curing (Newton, 6:43). The rejection sets forth the position that

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one of ordinary skill in the art would have found it obvious to substitute the injector and clamping of Newton into the method of Flory in view of Flory's suggestion of the interchangeability of pouring and injecting of resin (Flory, 4:66). Appellant's remarks appear to be drawn to showing that Newton fails to teach all of the claimed elements, namely the combination of clamping of an injector against an anchor. However, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). With regard to Appellants' assertion that the references do not teach the clamping of an injector, it is noted that Appellants' arguments do not consider the portions of the Newton reference at 1:23-26 ("The nozzle from the resin injection machine is clamped to the injection port of the mold and pressurized resin is fed from the injection machine, entering the reinforcing fibers at the injection port.") and 2:12 ("forces imposed when closing the mold"). Even if one overlooks these teachings of the reference, it is submitted that the use of clamped molds and injection of resin is conventional in the art, and that the entire field of injection molding is based upon this knowledge. One of ordinary skill in the art is not an automaton. It is therefore submitted that one of ordinary skill in the art at the time of the invention practicing the Flory method would have recognized the benefits of a sealed and clamped configuration for introduction of resin as a substitutable alternative to the pouring of Flory.

To the extent that Appellants rely on *Dembiczak* and *Ashland Oil* for the position that there must be a teaching, suggestion, or motivation, it is submitted that other rationale for combining references are no longer foreclosed. Nevertheless, in view of Flory's suggestion of

resins which may be poured or injected (4:66) and teaching to use an insert (4:10-35), and Newton's method of injecting of resin into a fiber/insert structure (Fig. 2), it is submitted that the combination of these references satisfies even the rigid TSM test.

With regard to Appellants' position that the combination would destroy the Flory method because of the use of the connecting lugs, the Examiner's position is that the lugs would not make the anchor of Flory incompatible with a second mold. Additionally, Appellants have also not considered that the lugs depicted by Flory are apparently optional (Flory, 4:7, "may be provided with attachment lugs"), and that they are but one means of attachment that may be used (Flory, 4:8-9).

Argument B

Appellants argue that none of the references disclose the step of clamping the injector against the open end of the anchor so that the injection orifice is directed towards the strands and the sealing surface seals the open end of the anchor. Appellants argue that Schimmeyer applies the potting compound before the open end of the anchor is sealed by the pin. Appellants further argue that Sugerman does not teach the clamping of an injector against the open end of the anchor. Appellants concede that Sugerman discloses that resin can be poured or injected into the mold through bores in a flange. Appellants further argue that significant modification would be required if Schimmeyer's pin is to function as an injector, and that such a modification destroys the intent and purpose of Schimmeyer's end fitting. Appellants further argue that Sugerman is non-analogous art because it attaches bristles to the body of a hairbrush.

Response B

Appellants' arguments appears to summarize the Examiner's position as arguing that it would be obvious to modify Schimmeyer's pin to make it an injector. However, the claim does not require any pin, and the rejection of Claim 20 should be interpreted instead to set forth the position that it would have been obvious to place an injector hole in the flange of Schimmeyer as an alternative to the dipping of the fibers and insertion of the pin depicted in Figs. 2 and 3 of Schimmeyer. Sugerman teaches providing a flange having ports for injection and venting of resin (Fig. 2, items 19 and 20), and it would have been obvious to also provide these ports onto the flange of Schimmeyer.

While it is noted that Schimmeyer provides application of a potting compound before the sealing of the closure to the anchor (Fig. 2), it is generally obvious to rearrange the order of process steps disclosed by the prior art. *Ex parte Rubin*, 128 USPQ 440 (Bd. App. 1959). *Rubin* is particularly instructive in this case because it deals with order of assembly and impregnation with a thermosetting material, and Schimmeyer teaches impregnation with thermosetting resins such as epoxy (Schimmeyer, 3:21 and 3:23) and assembly of parts (anchor and closure).

Regarding the alleged failure to teach "clamping", it is noted that Appellants' arguments do not address the portion of Schimmeyer cited on page 5 of the 28 August 2007 Non-final rejection (Claim 20, step d). In view of Schimmeyer's teaching that "The tapered pin 26 is subsequently pushed into complete engagement" with the fibrous mass, it is submitted that pushing and clamping would have been obvious.

It is submitted that the both prongs of the analogousness test are met in this case. Appellants argue that the field of endeavor is limited to cables and ropes. It is noted that the

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specification also describes the field as a process for infusing liquid potting compound into the strands of cable or rope. Sugerman provides bundles of bristles (which are considered to be strands) which are subsequently anchored with a liquid potting compound in order to affix an anchor, and therefore it is submitted that Sugerman is within the same field of endeavor.

However, even if the Sugerman reference is ultimately determined not to be of the same field of endeavor, Sugerman provides an injector and mold which are used to embed fibrous materials in a thermosetting (curing) resin, and therefore are still believed to be reasonably pertinent to the particular problem.

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(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.


Respectfully submitted,

Matthew J. Daniels



Conferees:

Christina Johnson


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SUPERVISORY PATENT EXAMINER
Romulo H. Delmendo, Appeal Conferee